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PLATE II. *Pogonatum urnigerum*.

up around it, that it gives it that appearance (Fig. 4.): and so the process goes on, until finally the calyptra is turned completely inside out (Fig. 5.). It is remarkable how long these frail things remain in this last position. I kept some of the plants moist four or five days, and even handled them somewhat roughly, before the calyptras fell off. When dried, they fall immediately.

Washington, D. C.

#### NOTES ON VERMONT MOSSES.

A. J. GROUT.

##### I. Recent Additions to the List of Vermont Mosses.

The following list of species new to Vermont is based mostly on my collections made during the summers of 1902 and 1903. A few of the additions are specimens that have been some time in my herbarium but which have only recently been determined. A critical study of a portion of Frost's collection, while preparing Part II of my "Mosses with Hand-Lens and Microscope," resulted in two or three finds, and doubtless there are more to be made when the whole collection shall be carefully studied.

This is the third additional list since the original list was published in 1898. The second addition was published in *Rhodora* for Sept. 1902. I am

greatly indebted to Dr. G. N. Best for assistance in determining some of the most difficult specimens. In fact Dr. Best facetiously told me at one time that if there were more specimens in Vermont like those I had been sending him, I would better move to some other state.

*BUXBAUMIA INDUSIATA* Brid. Willoughby. Miss Annie Lorenz. Det. Mrs. Britton.

*POLYTRICHUM SMITHIAE* Grout, BRYOLOGIST, May, 1903. Mt. Mansfield.

*DICRANODONTIUM LONGIROSTRE* (W. & M.) B. & S. Willoughby. Two stations. Miss Annie Lorenz.

*DICRANUM BONJEANI* DeNot. Old roofs, Newfane; swamp, Charlotte, Pringle.

*DITRICHUM HOMOMALLUM* (Hedw.) Hampe var. Det. Dr. Best. Clefts in rocks in cool ravine, Newfane.

*BARBULA GRACILIS* (Schleich.) Schwaegr. Crevices of limestone rocks, Brattleboro. Frost. Fide L. & J. Manual, p. 127.

*TORTULA RURALIS* (L.) Ehrh. Dry limestone rocks at base of cliffs, No. Pownal, Vt. A. LeRoy Andrews. Determined as *Tortula montana* by Dr. Best, but the leaf cells are fully 0.013 mm. in the upper portion so that it seems almost certain that the plants are depauperate specimens of the polymorphous *T. ruralis*.

*GRIMMIA AMBIGUA* Sulliv. Frost's *G. Donii* var. *sudetica* proves to be almost typical *G. ambigua*.

*G. APOCARPA GRACILIS* (Schleich.) Web. & Mohr. Cliffs, Glebe Mt., Newfane.

*G. APOCARPA RIVULARIS* (Brid.) Web. & Mohr. Common.

*G. CONFERTA* Funck. var. Limestone ledges, Stratton.

*G. CONFERTA OBTUSIFOLIA* Schimp. Dry limestone cliffs, Snake Mt.

*G. PENNSYLVANICA* Schwaegr. Dry ledges, Jamaica.

***G. Pennsylvanica Bestii*** n. var. Growing in short, wide, loose tufts on stone in walls and on ledges in open fields. The stems are less than 5 mm. high; the leaves are shorter with shorter hair points and frequently with lamina of a single layer throughout. The lower leaf cells are characteristically sinuose as in the species. The leaves bear on the back numerous bodies which look like propagula, but which Mrs. Britton and Dr. Howe believe to be a species of *Alga*. This form is very common in Newfane and the surrounding towns, and for several years I have been attempting to locate it. Very likely it will prove to be a good species and if so it should be called *G. Bestii*.

*ORTHOTRICHUM OBTUSIFOLIUM* Schrad. On the bark of maple and pear trees, Newfane.

*O. SCHIMPERI* Hamm. On maple trees, Brandon. Miss Harriet Wheeler.

*O. SPECIOSUM* Nees. Frequent on fruit trees, Newfane.

*BRYUM CAPILLARE* L. On rocks, Brattleboro, Frost; Guilford, Mrs. J. B. Clapp.

*AMBLYSTEGIUM JURATZKANUM* Schimp. In an old cellar hole. Alt. 1,600

ft. Newfane. Det. L. S. Cheney.

FABROLESKEA AUSTINII (Sulliv.) Best. On pear tree with various species of *Orthotrichum*, *Hypnum reptile* and *Pylaisia Schimperi*. The species covered about a square inch, and would have been overlooked with ordinary scrutiny but the tree on which it grew was carefully studied from my notes on moss habitats. It was distinguished from *Pylaisia* because the leaves were not homomallous, and from *Hypnum reptile* by the straight capsules. Det. Dr. G. N. Best.

HETEROCLADIUM SQUARROSULUM (Voit.) Lindb. Det. Dr. Best. Abundant and fruiting on humus over moist stones, Ball Mt., Townshend. Not before reported from eastern United States except Mt. Washington, and has been collected in fruit but twice before in North America. Issued as No. 169 of my N. A. Musci Pleurocarpi but wrongly identified as *Thuidium microphyllum*.

LESKEA NERVOSA NIGRESCENS (Kindb.) Best. Abundant on bases of sugar maple and other rough barked hardwoods in Newfane. No. 175, N. A. Musci Pleurocarpi.

NECKERA COMPLANATA (L.) Hueben. Willoughby. Miss Annie Lorenz. Det. Mrs. Britton.

## II. Notes on Species Previously Listed.

ATRICHUM CRISPUM James. I feel sure that this is a mistake in Frost's list for there is a specimen of this species in his collection, but it is from New Jersey. I find no specimens of this species so far inland.

GRIMMIA UNICOLOR. In fruit. Brattleboro. Frost.

BARBULA CONVOLUTA. Newport. Faxon.

TRICHOSTOMUM CYLINDRICUM (Bruch.) C. M. (*Didymodon cylindricus* B. & S.). No Vt. specimens can be found. The specimen listed from Rock Point proves to be *Tortella tortuosa* (L.) Limpr. (*Barbula tortuosa* Web. & Mohr.).

BRYUM DUVALII. Swampy soil. Alt. 1,600 feet, Newfane.

MNIUM HORNUM. Abundant along Clear Brook, Dover.

LESKEA NERVOSA. A depauperate form with numerous flagella at the ends of some of the branches, is very common about the bases of trees in Newfane.

GYMNOSTOMUM RUPESTRE Schleich. The only Vermont specimen correctly referred to this species is the one collected by Faxon at the foot of Mt. Hore cliffs, June 23, 1884. Most of the other specimens referred to this species are *G. curvirostrum* (Ehrh.) Hedw. var. *scabrum* Lindb. which has been collected at Rock Point, Burlington, by myself and much earlier by Mr. Pringle on the "Cliffs of Lake Champlain." This var. is readily recognized by its papillose stems. *G. curvirostrum* has dark red-brown capsules, *G. rupestre* pale yellowish brown capsules.